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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,079	06/20/2003	Elliot N. Linzer	03-0578 1496.00309	6852

24319 7590 04/03/2008

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ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
04/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/600,079	LINZER, ELLIOT N.	
	Examiner	Art Unit	
	Andy S. Rao	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2007 and 23 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's arguments with respect to claims 1-25 as filed on 6/28/07 and as discussed in the Interview Summary of 10/23/07 have been considered but are moot in view of the new ground(s) of rejection.

2. The Applicant presents nine arguments contending the Examiner's rejection of claims 1-25 under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Kato et al., (hereinafter referred to as "Kato"), as was set forth in the Office Action of 4/18/07, arguments which the Applicant felt were unanswered when the Examiner issued a subsequent rejection of claims 1-25 under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Kato et al., (hereinafter referred to as "Kato") and Prakasam et al., (US 2004/0240559 A1 hereinafter referred to as "Prakasam") of 9/19/07, said subsequent rejection based on new grounds inclusive of a tertiary reference. Even though a third reference was incorporated into the rejection of record, the Applicant felt that the arguments brought forth were directed towards the primary Jeon and secondary Kato references and should have been answered prior to the issuance of the 9/19/07 action, a point which was the primary focus of the Interview Summary of 10/23/07. However, after a careful consideration of the arguments presented the Examiner must mostly disagree with the basis of such an assertion, and maintain the sufficiency of the Office Action of 9/19/07 for the reasons that follow.

After summarizing the rejection of record as based on the Examiner's reliance on the primary reference (Amendment of 6/28/07: page 11, lines 8-15) and discussing the salient features of the claim (Amendment of 6/28/07: page 11, lines 16-18), the Applicant argues that

Jeon as relied upon by the Examiner fails to address the "...macroblock adaptive field/frame coding..." limitation of the claim (Amendment 6/28/07: page 11, lines 18-23; page 12, lines 1-7), in the fashion that one of ordinary skill in the art would understand (Amendment of 6/28/07: page 12, lines 6-18). The Examiner respectfully disagrees. While Jeon was asserted to address this feature in the Office Action 4/18/07, after reviewing the Applicants cogent argument of 6/28/07, the Examiner could not rely upon Jeon to meet this feature. It is noted that the subsequent Office Action of 9/19/07 while relying upon Jeon as a primary reference now ascribed this feature (i.e. MBAFF coding) to the tertiary Prakasam reference (Office Action of 9/19/07: page 3, lines 13-23; page 4, lines 1-4). In short, while Jeon remains the foundation for the rejection of record especially in addressing the a "...prediction type for two blocks..." for types one through four, the Examiner has not relied upon Jeon in the exactly the same manner, and thus contrary to the Applicant's stance as put forth in the Interview of 10/23/07, the reliance upon Prakasam to specifically show MBAFF coding represents a new grounds of rejection (Prakasam: paragraph [0069], lines 1-11; paragraph [0071], lines 1-7; page [0072], lines 10-17). Accordingly, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).* The Examiner notes that the rejection of record relies upon Prakasam to specifically address the use of MBAFF coding, and therefore, the primary Jeon reference, on its own doesn't have meet this feature but meets it with its combination with the tertiary Prakasam reference.

Secondly, after establishing further salient features of the claim concerning the "…exchanging…" limitation (Amendment of 6/28/07: page 12, lines 19-24; page 13, lines 1-4), and providing applicant's interpretation of the applied Jeon reference (Amendment of 6/28/07: page 13, lines 5-22), the Applicant argues that Jeon as applied fails to address the "…a particular value of a plurality of values, each of which use a plurality of motion vectors defining which of the two (MBAFF coded) blocks use which of a plurality of motion vectors based upon one of a plurality of prediction types…" as in the claims (Amendment of 6/28/07: page 13, lines 22-30; page 14, lines 1-5). The Examiner respectfully disagrees. Firstly, it is noted that the Prakasam reference would be called upon the address the specific use of "…macroblock adaptive field/frame coding…" techniques, so basically Jeon taken alone has to show the use of "…a particular value of a plurality of values, each of which use a plurality of motion vectors defining which of the two blocks use which of a plurality of motion vectors based upon one of a plurality of prediction types…" as specified. The Examiner notes that it is the combination of the use of the specific values of TD_D and TD_B (Jeon: paragraph [0023], lines 1-7: temporal distance values between the B frame the list1 and list0 reference frames) as a particular value which uses a plurality of motion vectors (Jeon: paragraph [0023], lines 8-12: MV_F and MV_B for both values) that define which of the two blocks use which of a plurality of motion vectors based upon one of a plurality of prediction types (Jeon: paragraph [0027], lines 1-12: each field based macroblock has its own direct mode vectors calculated for it). In particular, since Jeon discloses direct mode coding for field based B frames (Jeon: paragraph [0027], lines 1-12; paragraph [003], lines 1-12), that particular condition relies upon particular values (i.e. temporal distances) which use a plurality of motion vectors (respective pairs of direct mode vectors for the odd and even fields of

a B-frame) as operative upon field specific macroblocks. Accordingly, the Examiner maintains that the limitation prior to the introduction of the use of specifically recited MBAFF coding, is met.

Additionally, after highlighting a further feature of the claims of the invention (Amendment of 6/28/07: page 14, lines 6-8), and providing Applicant's interpretation of the section of the applied reference (Amendment of 6/28/07: page 14, lines 9-30), the Applicant posits that the primary Jeon reference fails to address the "…representing…" limitation (Amendment of 6/28/07: page 14, lines 31-34; page 15, lines 1-15), as in the claims. The Examiner flatly disagrees. Jeon clearly discloses ***"…scaling the motion vector…"*** in the citation in question (Jeon: paragraph [0055], lines 1-6), which the Examiner notes entails adapting the value of a motion vector to represent the motion of a group of blocks (i.e. in this case, two) of a group of blocks in a macroblock. One of ordinary skill in the art would clearly ascertain that the scaling factor in the disclosed "…scaling…" process for motion vectors specifies not only the change to the motion vector, but also change in area of effect of the motion vector. Accordingly, the Examiner maintains that this limitation is met, as well.

After calling the Examiner's attention the salient features of claim 21 (Amendment of 6/28/07: page 15, lines 16-20), the Applicant further argues that Jeon as applied is completely silent regarding the "…representation has less than a maximum number of bits capable of representing each possible combination…" limitation (Amendment of 6/28/07: page 15, lines 21-23; page 16, lines 1-8), as in the claim. The Examiner respectfully disagrees. Jeon clearly discloses ***"…scaling the motion vector…"*** in the citation in question (Jeon: paragraph [0055], lines 1-6), which the Examiner notes entails adapting the value of a motion vector to represent

the motion of a group of blocks (i.e. in this case, two) of a group of blocks in a macroblock. One of ordinary skill in the art would clearly ascertain that the scaling factor in disclosed "…scaling…" process for motion vectors specifies not only the change to the motion vector, but also change in area of effect of the motion vector. In this case, since binary arithmetic (i.e. bits) is used to represent coded digital information (i.e. the value of a motion vector), the value of a scaled motion vector would be representation as in the manner of the claims. Accordingly, the Examiner maintains that the limitation is met.

With regards to the Applicant's comments regarding claim 4, the Examiner notes that the points raised have merit, in that, Jeon by itself doesn't address the "…excluding a second plurality of the motion vectors…" as in the claims (Amendment of 6/28/07: page 16, lines 9-18). In particular, the Examiner would note that rejection of the Office Action of 9/19/07 specifically focuses on limitations of preceding claim 3 concentrating on the disclosure "…a first and second plurality of motion vectors…" as has been discussed above regarding the computation of field based direct mode vectors for B-frames (Jeon: paragraph [0027], lines 1-12: each field based macroblock has its own direct mode vectors calculated for it). The Examiner would note that the tertiary Prakasam reference specifically addresses the use of an "excluding" feature. In particular, the teaching discloses using syntax elements for indicating which specific macroblock pairs are to be used for reference calculations (Prakasam: paragraph [0071], lines 1-7), such as "…condTerm…" bit fields for accessing specific rules for excluding certain motion vector pairs (Prakasam: paragraph [0078], lines 1-18). The Office Action of 9/19/07 should have provided an in depth dissection of how the rejection of record clearly addresses the "excluding..." limitation with regards to claim 4, and this Office Action hopes to rectify that deficiency with the rejection

below. With regards to the establishment of a sufficient *prima facie* case of obviousness, the Examiner would note that since this feature is a disclosed integral part of the MBAFF teaching of Prakasam, one of ordinary skill in the art at the time of the invention would have readily co-opted this feature into the Jeon-Kato combination in order to optimize reference buffer usage (Prakasam: paragraph [0074], lines 1-3). Accordingly, the Examiner maintains that the references as combined clearly address the "excluding" step.

Furthermore, after establishing further salient features of the claims 8-9 concerning the "…wherein said motion vectors comprise two motion vectors and each of said two motion vectors is used for a different one of said two blocks…" limitation (Amendment of 6/28/07: page 16, lines 19-24), and providing applicant's interpretation of the applied Jeon reference (Amendment of 6/28/07: page 17, lines 1-6), the Applicant argues that Jeon as applied fails to address the feature (Amendment of 6/28/07: page 17, lines 7-15), as in the claims. The Examiner respectfully disagrees. Jeon discloses that for direct mode motion prediction in an interlaced B-frame two vectors (Jeon: paragraph [0023], lines 8-12: MV_F and MV_B for both fields, respectively) in the current B-frame are generated (Jeon: paragraph [003], lines 1-12). As such, the use of list0 or list1 predictions to generate a respective vector pair for each a pair of $MV_{F(OF,EF)}$ and $MV_{B(OF,EF)}$ for each field (Jeon: paragraph [0027], lines 1-12: each field based macroblock has its own direct mode vectors calculated for it). And since the vector pairs are field specific, they point to different blocks as in the claims. Accordingly, the Examiner firmly maintains that the limitation is met.

After summarizing the salient features of claim 12 (Amendment of 6/28/07: page 17, lines 16-21), the Applicant argues that the Jeon and Kato combination, although now this would

be directed towards the Jeon-Kato-Prakasam rejection of record, fails to address the "...interpreting said motion vectors in said group based upon said particular value while above a predetermined standard level for a bitstream conveying said two macroblocks; and using said motion vectors in said group independently of said particular value while below said predetermined standard level for said bitstream..." limitation (Amendment of 6/28/07: page 17, lines 22-30; page 18, lines 1-3), as in the claim. The Examiner flatly disagrees. Firstly, In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "standard level for a bitstream...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).* The Examiner notes that the "standard level" qualifier could be reasonably associated with the "said particular value" limitation of the claim, and not as a characteristic for the bitstream. This is how the claim has been analyzed and the Examiner would note that Jeon clearly discloses having MV_F and MV_B values being calculated (i.e. interpreted) one way when greater than 8, and another way (i.e. independently of said particular value- the disclosed Z variable) otherwise (Jeon: paragraph [0060], lines 6-10). Accordingly, the Examiner maintains that this limitation is met. Furthermore, the Examiner would note that even if the claim was amended to make this line or argument tenable (i.e. a "standard level" being associated as a characteristic of the bitstream), the Examiner notes that Jeon, alone, still meets this feature (Jeon: paragraph [0004], lines 7-13). In particular, the Examiner notes that the use of direct mode prediction which would require the use of interpreted motion vectors only occurs when motion continuity is constantly maintained (i.e. a

standard level characteristic of the bitstream is verified). As such, the Examiner asserts that this feature would remain met in the instance that the claim were amended to clearly associate the "…standard level…" qualifier with the bitstream.

After summarizing the salient features of claim 23 (Amendment of 6/28/07: page 18, lines 4-14), and providing an interpretation of applied section of the primary reference (Amendment of 6/28/07: page 18, lines 15-33; page 19, lines 1-11), and Applicant argues that Jeon fails to address the "…wherein said representation is configured to accommodate (i) a first number of possible vectors that could be expressed by a first of said motion vectors corresponding to a first block of said two blocks, (ii) a second number of possible vectors that could be expressed by a second of said motion vectors corresponding to said first block, (iii) a third number of possible vectors that could be expressed by a third of said motion vectors corresponding to a second block of said two blocks and (iv) a fourth number of possible vectors that could be expressed by a fourth of said motion vectors corresponding to said second block…" features (Amendment of 6/28/07: page 19, lines 12-26), as in the claim. The Examiner respectfully disagrees. It is duly noted that Jeon discloses the use of motion vector differences mvd_10 and mvd_11 (Jeon: paragraphs [0006], lines 10-17) which ***represents differences in the numbers of motion vectors*** for list0 and list1 predictions. The first difference, mvd_10, is the claimed first number minus the claimed second number and the second difference, and the second difference, mvd_11, is the claimed third number minus the claimed fourth number. Note the claim calls for an accommodation but not specific discrete values (i.e. four). As such, the Examiner asserts that Jeon's use of motion vector differences addresses this limitation as currently claimed.

With regards to claims 24-25, and the specific limitations of reciting representations regarding "…wherein the presentation is less than a base 2 logarithm of a product of the first number, second number, third number, and fourth number rounded up to a nearest integer..." and "…wherein the representation is capable of representing up to two motion vectors...104 bits..." respective limitations (Amendment of 6/28/07: page 19, lines 27-29; page 20, lines 1-3 and 10-14), the Applicants argue that the combination of record fails to address the specific mathematical manipulations recited therein (Amendment of 6/28/07: page 20, lines 4-9 and 15-22; page 21, lines 1-5). The Examiner respectfully disagrees. It is duly noted that all salient features of the claims representing a base ten numerical value into a digitally constrained base two numerical representation, a skill that one of ordinary skill in art long since acquired after completing an introductory survey course in digital electronics at the undergraduate collegiate level using a textbook such as ***Switching And Finite Automata Theory*** by Zvi Kohavi for the acquisition of such skills. *Official Notice Taken.* While the manipulation of going from an Arabic numbering scheme to base two number system might appear novel to the Applicant, such a predicament was one of the initial tasks that that digital electronics had to overcome in adapting a number system from the well known base 10 system to a hexadecimal or base 2 number system (i.e. number systems that could be represented a significant collection of ones and zeros). The subject matter of these claims is not patentable, and represents nothing more than the analogous translation of words from one language to another with the word meanings staying the same. In particular, one of ordinary skill in art knowing that the methods of claims would generate base ten numbers would be able to form a multiplied product from the four numbers of claim 24, and convert that to a base 2 number, and likewise, for claim 25, to define a base 2 numbering system

would allow for the representation of the 67,108,864 unique values, especially for the following factors: conventionally known digital electronics mostly employs a two state (i.e. binary) based representation which would be used to construct the motion estimator, one of ordinary skill in the art would recognize that a base 2 numbering system could thus be applied to the binary motion estimator, one of ordinary skill in art would have been well versed in with base 2 mathematics as discussed above, and that one of ordinary skill in art would note that the binary representations could be readily augmented to the motion vector differences of the primary reference (Jeon: paragraph [0006], lines 1-7) or as the syntax elements of the tertiary reference (Prakasam: paragraph [0072], lines 8-18) for implementing the desired macroblock adaptive field/frame coding discussed below. The translation from an Arabic numerical representation to binary representation, such as the base 2 or base 16 (hexadecimal) systems, represents nothing more choosing from a known set of predictable solutions allowing for a well established and reasonable expectation of success, *KSR International Co. v. Teleflex, Inc., 550 U.S.-, 82 USPQ2d 1385 (2007).*

The rejection of record appears below, which when taken in conjunction with the Examiner's responses to presented arguments discussed above such hopefully addresses the Applicant's concerns regarding the completeness of the pending rejection (Amendment of 6/28/07: page 21, lines 7-13). While the Amendment of 6/27/08 and the Interview Summary of 10/23/07 make manifest that an exhaustive discourse regarding the features of the instant invention has been undertaken on the Applicant's part, the Examiner fails to see how the current scope of the claims even tangentially approaches the realm of patentable subject matter as discussed above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon in view of Kato et al., (hereinafter referred to as "Kato") and Prakasam et al., (US 2004/0240559 A1 hereinafter referred to as "Prakasam").

Jeon discloses a method for representing a motion for two blocks (Jeon: paragraph [0014], lines 1-9), comprising the steps of: exchanging a particular value of a plurality of values, each of said values defining which of said two blocks use which of a plurality of motion vectors (Jeon: paragraph [0023], lines 1-12) based upon one of a plurality of prediction types (Jeon: paragraph [0005], lines 1-6), wherein said prediction types include (i) a first prediction type if said two blocks using a first reference picture list (Jeon: paragraph [0007], lines 1-10) and (ii) a second prediction type of said two blocks using a second reference picture list (Jeon: paragraph [0007], lines 11-15); (iii) a third prediction type of said two blocks using a bidirectional prediction (Jeon: paragraph [0004], lines 1-4: bi-directional mode) and (iv) a fourth prediction type of said two blocks using an intra prediction (Jeon: paragraph [0004], lines 1-4: intra-mode), and representing said motion for said two blocks with a group comprising said particular value and up to all of said motion vectors (Jeon: paragraph [0055], lines 1-12), as in claim 1. However, Jeon fails disclose exchanging a particular value with a memory wherein said exchanging

includes at least one of reading to from said memory and writing to said memory to implement steps of the method or the fact that the two blocks use a macroblock adaptive field/frame coding scheme, as in the claim. Kato discloses a method for representing a motion for two blocks (Kato: column 34, lines 65-67; column 35, lines 1-20) by using a memory and associated circuitry (Kato: column 23, lines 40-50) in order to perform the motion vector calculations for predictions (Kato: column 1, lines 50-65). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Kato memory and associated circuitry to implement the exchanging steps into the Jeon method in order to more efficiently perform the Jeon calculations for predictions (Jeon: paragraph [0053], lines 10-13). The Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step, has a majority of the features of claim 1, however, the Jeon-Kato combination still fails to address having the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Prakasam discloses the use of a macroblock adaptive field/frame coding scheme (Prakasam: paragraph [0069], lines 1-11; paragraph [0071], lines 1-7; paragraph [0072], lines 10-17) in order to minimize storage requirements in the reference buffers (Prakasam: paragraph [0074], lines 1-3). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the Prakasam teaching of using a macroblock adaptive field/frame coding scheme into the Jeon-Kato combination in order to minimize the storage requirements of the reference buffers/memories therein. The Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has all of the features of claim 1.

Regarding claim 2, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein said group has at most a plurality of bits that is less than a maximum number of bits capable of representing each unique possibility for said motion vectors (Jeon: paragraph [0055], lines 1-13), as in the claim.

Regarding claim 3, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein a first plurality of said motion vectors corresponding to a first of said two blocks matches a second plurality of said motion vectors corresponding to a second of said two blocks (Jeon: paragraph [0101], lines 1-8), as in the claim.

Regarding claim 4, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has the excluding said second plurality of said motion vectors from said group (Prakasam: paragraph [0078], lines 1-18), as in the claim.

Regarding claims 5-6, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein said group includes at most two of said motion vectors (Jeon: paragraphs [0108-0109], lines 1-15), as in the claims.

Regarding claim 7, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam

macroblock adaptive field/frame coding scheme, has wherein one of said values defines using none of said motion vectors (Jeon: paragraph [0096], lines 1-4), as specified.

Regarding claim 8, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has further comprising the step of: using a list 0 prediction of said prediction types with said motion vectors, wherein said motion vectors comprises two motion vectors and each of said two motion vectors is used for a different one of said two blocks (Jeon: paragraph [0100], lines 1-4), as in the claim.

Regarding claim 9, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has using a list 1 prediction of said prediction types with said motion vectors, wherein said motion vectors comprises two motion vectors and each of said two motion vectors is used for a different one of said two blocks (Jeon: paragraph [0100], lines 1-4), as in the claim.

Regarding claim 10, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein under said bidirectional prediction of said prediction types for said motion vectors, each of said motion vectors is used for both of said two blocks (Jeon: paragraph [0006], lines 10-17), as in the claim.

Regarding claims 11-12, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein the method further generating said

group with said particular value while above a predetermined standard level for a bitstream conveying said two macroblocks (Jeon: paragraph [0033], lines 1-10); and generating said groups without said particular value while below said predetermined standard level for said bitstream (Jeon: paragraph [0055], lines 1-11), as in the claims.

Jeon discloses an apparatus (Jeon: paragraph [0055], lines 1-4), comprising: an element configured to exchange a particular value of a plurality of values, each of said values defining which of said two blocks use which of a plurality of motion vectors (Jeon: paragraph [0023], lines 1-12) based upon one of a plurality of prediction types (Jeon: paragraph [0005], lines 1-6), wherein said prediction types include (i) a first prediction type of said two blocks using a first reference picture list (Jeon: paragraph [0007], lines 1-10), (ii) a second prediction type of said two blocks using a second reference picture list (Jeon: paragraph [0007], lines 11-15), (iii) a third prediction type of said two blocks using a bidirectional prediction (Jeon: paragraph [0004], lines 1-4: bi-directional mode) and (iv) a fourth prediction type of said two blocks using an intra prediction (Jeon: paragraph [0004], lines 1-4: intra-mode); and an element configured to represent said motion for said two blocks with a group comprising said particular value and up to all of said motion vectors (Jeon: paragraph [0055], lines 1-12), as in claim 13. However, Jeon fails disclose exchanging a particular value with a memory and associated circuitry wherein said exchanging includes at least one of reading to from said memory and writing to said memory as a part of the apparatus, of the fact that the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Kato discloses an apparatus (Kato: figure 1) for representing a motion for two blocks (Kato: column 34, lines 65-67; column 35, lines 1-20) by using a memory and associated circuitry (Kato: column 23, lines 40-50) in order to perform the motion vector

calculations for predictions (Kato: column 1, lines 50-65). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Kato memory and associated circuitry and exchanging means into the Jeon apparatus in order to more efficiently perform the Jeon calculations for predictions (Jeon: paragraph [0053], lines 10-13). The Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means, has a majority of the features of claim 1, however, the Jeon-Kato combination still fails to address having the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Prakasam discloses the use of a macroblock adaptive field/frame coding scheme (Prakasam: paragraph [0069], lines 1-11; paragraph [0071], lines 1-7; paragraph [0072], lines 10-17) in order to minimize storage requirements in the references (Prakasam: paragraph [0074], lines 1-3). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the Prakasam teaching of using a macroblock adaptive field/frame coding scheme into the Jeon-Kato combination in order to minimize the storage requirements of the reference buffers/memories therein. The Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has all of the features of claim 13.

Regarding claim 14, the Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein said group has at most a plurality of bits that is less than a maximum number of bits representing every unique possibility for said motion vectors (Jeon: paragraph [0055], lines 1-8), as in the claims.

Regarding claims 15-16, the Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein said group includes at most two vectors (Jeon: paragraph [0048], lines 1-8), as in the claims.

Regarding claim 17, the Jeon apparatus now incorporating the Kato memory and associated circuitry for implementing the exchanging step, has a coding circuit configured to encode said particular value within a bitstream (Jeon: paragraph [0055], lines 1-6), as in the claim.

Regarding claim 18, the Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has a decoder circuit configured to decode said particular value from a bitstream (Kato: figure 5), as in the claim.

Regarding claim 19, the Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein a first of said values defines using none of said motion vectors (Jeon: paragraph [0005], lines 4-7); a second of said values defines a first prediction type (Jeon: paragraph [0006], lines 1-3); a third of said values defines a second prediction type (Jeon: paragraph [0006], lines 4-7); a fourth of said values defines said bidirectional prediction type (Jeon: paragraph [0006], lines 8-14), as the claim.

Jeon discloses an apparatus (Jeon: paragraph [0055], lines 1-4), comprising: an element storing a group (Jeon: paragraph [0006], lines 1-5); an element exchanging a particular value of a plurality of values, each of said values defining which of said two blocks use which of a plurality

of motion vectors (Jeon: paragraph [0023], lines 1-12) based upon one of a plurality of prediction types (Jeon: paragraph [0005], lines 1-6); an element representing said motion for said two blocks with a group comprising said particular value and up to all of said motion vectors (Jeon: paragraph [0055], lines 1-12), wherein said prediction types include (i) a first prediction type of said two blocks using a first reference picture list (Jeon: paragraph [0007], lines 1-10), (ii) a second prediction type of said two blocks using a second reference picture list (Jeon: paragraph [0007], lines 11-15), (iii) a third prediction type of said two blocks using a bidirectional prediction (Jeon: paragraph [0004], lines 1-4: bi-directional mode) and (iv) a fourth prediction type of said two blocks using an intra prediction (Jeon: paragraph [0004], lines 1-4: intra-mode); and an element configured to represent said motion for said two blocks with a group comprising said particular value and up to all of said motion vectors (Jeon: paragraph [0055], lines 1-12), as in claim 20. However, Jeon fails disclose exchanging a particular value with a memory and associated circuitry wherein said exchanging includes at least one of reading to from said memory and writing to said memory as a part of the apparatus, of the fact that the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Kato discloses an apparatus (Kato: figure 1) for representing a motion for two blocks (Kato: column 34, lines 65-67; column 35, lines 1-20) by using a memory and associated circuitry (Kato: column 23, lines 40-50) in order to perform the motion vector calculations for predictions (Kato: column 1, lines 50-65). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Kato memory and associated circuitry and exchanging means into the Jeon apparatus in order to more efficiently perform the Jeon calculations for predictions (Jeon: paragraph [0053], lines 10-13). The Jeon apparatus, now implemented in the Kato memory and

associated circuitry for implementing the exchanging means, has a majority of the features of claim 1, however, the Jeon-Kato combination still fails to address having the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Prakasam discloses the use of a macroblock adaptive field/frame coding scheme (Prakasam: paragraph [0069], lines 1-11; paragraph [0071], lines 1-7; paragraph [0072], lines 10-17) in order to minimize storage requirements in the references (Prakasam: paragraph [0074], lines 1-3). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the Prakasam teaching of using a macroblock adaptive field/frame coding scheme into the Jeon-Kato combination in order to minimize the storage requirements of the reference buffers/memories therein. The Jeon apparatus, now implemented in the Kato memory and associated circuitry for implementing the exchanging means and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has all of features of claim 20.

Jeon discloses a method for representing a motion for two blocks (Jeon: paragraph [0014], lines 1-9), comprising the steps of: generating a representation of said motion for said two blocks, said representation having less than a maximum number of bits capable of representing each possible combination of four motion vectors for said two blocks (Jeon: paragraph [0055], lines 1-13), exchanging said representation (Jeon: paragraph [0023], lines 1-12), as in claim 21. However, Jeon fails disclose exchanging said representation with a memory wherein said exchanging includes at least one of reading to from said memory and writing to said memory to implement steps of the method or the fact that the two blocks use a macroblock adaptive field/frame coding scheme, as in the claim. Kato discloses a method for representing a motion for two blocks (Kato: column 34, lines 65-67; column 35, lines 1-20) by using a memory

and associated circuitry (Kato: column 23, lines 40-50) in order to perform the motion vector calculations for predictions (Kato: column 1, lines 50-65). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Kato memory and associated circuitry to implement the exchanging steps in order to perform the Jeon calculations for predictions (Jeon: paragraph [0053], lines 10-13). The Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step, has all of features of claim 21. The Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step, has a majority of the features of claim 21, however, the Jeon-Kato combination still fails to address having the two blocks using a macroblock adaptive field/frame coding scheme, as in the claim. Prakasam discloses the use of a macroblock adaptive field/frame coding scheme (Prakasam: paragraph [0069], lines 1-11; paragraph [0071], lines 1-7; paragraph [0072], lines 10-17) in order to minimize storage requirements in the references (Prakasam: paragraph [0074], lines 1-3). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the Prakasam teaching of using a macroblock adaptive field/frame coding scheme into the Jeon-Kato combination in order to minimize the storage requirements of the reference buffers/memories therein. The Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has all of the features of claim 21.

Regarding claim 22, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam

macroblock adaptive field/frame coding scheme, has wherein said representation comprises a binary representation (Jeon: paragraph [0006], lines 1-13), as in the claim.

Regarding claims 23-25, the Jeon method, now implemented in the Kato memory and associated circuitry for implementing the exchanging step and the incorporating the Prakasam macroblock adaptive field/frame coding scheme, has wherein said representation is configured to accommodate (i) a first number of possible vectors for a first of said motion vectors for a first block of said two blocks (Jeon: paragraph [0006], lines 1-4), (ii) a second number of possible vectors for a second of said motion vectors for said first block (Jeon: paragraph [0006], lines 5-7), (iii) a third number of possible vectors for a third of said motion vectors for a second block of said two blocks and (Jeon: paragraph [0006], lines 8-13) (iv) a fourth number of possible vectors for a fourth of said motion vectors for said second block (Jeon: paragraph [0005], lines 1-5), as in the claims.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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January 23, 2008